

# San Francisco Bay Conservation and Development Commission

455 Golden Gate Avenue, Suite 10600, San Francisco, California 94102 tel 415 352 3600 fax 415 352 3606

August 5, 2016

## Application Summary

(For Commission consideration on August 18, 2016)

**Number:** BCDC Permit Application No. 2016.002.00md  
**Date Filed:** July 22, 2016  
**90th Day:** October 20, 2016  
**Staff Assigned:** Pascale Soumoy (415/352-3669;  
pascale.soumoy@bcdc.ca.gov)

## Summary

**Applicants:** State and Federal Contractors Water Agency and Westervelt Ecological Services, LLC

**Location:** The area formerly occupied by Tule Red Duck Club, at 1903 Grizzly Island Road, bordered by Grizzly Bay, the Grizzly King Duck Club and California Department of Fish and Wildlife Grizzly Island Wildlife Area, in the Suisun Marsh Primary Management Area, Solano County (Exhibits A and B).



**Project:** The project would restore 420 acres of managed wetland (duck club) to tidal marsh by grading and recontouring a portion of the site to create tidal channels, tidal pannes/ponds and a transitional habitat berm; breaching the existing natural berm to reintroduce full daily tidal exchange to the site; and increasing topographic variability and habitat diversity across the site; removing tide gates; and creating an aeration structure to improve dissolved oxygen levels in water drained from adjacent properties.

The goal of the project is to “[e]nhance regional food web productivity and export [nutrients and plankton] to Grizzly Bay to support Delta smelt and longfin smelt recovery; [and] provide rearing, breeding and refuge habitats for a broad range of aquatic and wetland dependent species that utilize or depend upon the combination of brackish aquatic-tidal marsh habitat.” The project construction footprint would occur within approximately 150 acres of the managed wetlands and would be completed in two phases. The remaining 270 acres of managed wetland would be inundated as a result of the breach of the natural berm. The first construction phase involves preparing the site through grading and removal of vegetation and structures in the construction area; excavating tidal channels, ponds and pannes; constructing a transitional habitat alongside the existing levee; revegetating the disturbed areas with native plants; constructing an aeration structure and containment pond and water control structure to improve the water quality of water drained into the site. The second phase would involve removing two tide gates and the remaining on-site buildings and the breaching the natural berm, thereby connecting the restored site with the tidal waters of Grizzly Bay. Public access improvements include repairing two dilapidated off-site fishing piers, installing one interpretive sign, and clarifying a sign at a public parking lot near the site. The applicant also proposes to develop and conduct a marsh-wide public access study that would be done concurrently with the project restoration and construction activities. The restored site and public access improvements would be maintained in perpetuity as described in the project’s Adaptive Management and Monitoring Plan (2016) (Exhibits C, D).

## Issues

**Raised:** *The staff believes that the application raises four primary issues: (1) whether the project is consistent with the McAteer-Petris Act, San Francisco Bay Plan and Suisun Marsh Protection Plan policies regarding fill in managed wetlands; (2) whether the project would provide maximum feasible public access, consistent with the project; (3) whether the project is consistent with the Suisun Marsh Protection Plan and San Francisco Bay Plan policies on tidal marsh restoration; and (4) whether the project is consistent with the Commission's natural resources policies including Fish, Other Aquatic Organisms and Wildlife; and Water Quality.*

## Background

The project proponents are the State and Federal Contractors Water Agency and Westervelt Ecological Services, LLC. The State and Federal Contractors Water Agency is a California Joint Powers Authority of various water agencies that receive water transported across the Sacramento-San Joaquin River Delta by the State Water Project and Central Valley Project for distribution to local clients. There is no federal land or funding included as part of this project, however, the US Army Corps of Engineers will issue a federal permit. Westervelt Ecological Services, LLC creates stream, wetland and threatened and endangered species mitigation and conservation banks and provides habitat-planning services to landowners, businesses, government agencies and land trusts. It is a business unit of Westervelt Company, a private organization.

**Tule Red Project Site.** Formerly known as the Tule Red Duck Club, the proposed project site is located in the Suisun Marsh (Marsh) and is approximately 420 acres in size, 354 acres of which are owned by Westervelt and 66 acres of which are owned by California Department of Fish and Wildlife (CDFW) and is located in the Suisun Marsh (Marsh). The project site is mostly managed marsh, with upland habitat along the slopes and tops of bordering levees and a small amount of tidal marsh at its northern end and along the Grizzly Bay front. Two existing constructed levees make up the eastern boundary of the site, separating it from private lands to the east and CDFW to the south. To the west the site is bordered by a natural berm that separates it from tidal waters and the adjacent Grizzly Bay. As a managed wetland, two dual combination flap gates located at the north and south ends of the levees allow seasonal management of water on the site. Due to the operation of these flap gates and the naturally occurring berm, the site is currently not subject to daily tidal inundation. The project would restore the full tidal exchange by breaching the site and creating tidal channels, tidal pannes/ponds. Restoring the site to daily tidal cycles would provide rearing habitat for fish and increase its food web productivity. The construction of the sloped earthen berms at the eastern edge of the site would provide upland habitat and high tide refugia for protected and other native species as well as maintaining the current flood protection levels for adjacent properties.

**BCDC Jurisdiction and Plans.** The project site is within the Suisun Marsh Primary Management Area and San Francisco Bay and therefore must be consistent with the McAteer-Petris Act, Suisun Marsh Preservation Act (SMPA) the Suisun Marsh Protection Plan (SMPP), as well as the San Francisco Bay Plan (Bay Plan). Per the SMPP, projects in the Suisun Marsh Primary Management Area are subject to the SMPP unless the Bay Plan policies are more specific.

**Other Regional Plans.** The Suisun Marsh is an area of national importance, as it is the western extent of the California Delta. As such there are a number of regional efforts underway that affect the Marsh and its management. As a result, projects within the Marsh should be considered in light of these plans.

**Suisun Marsh Habitat, Management, Preservation and Restoration Plan (2014).** The Suisun Marsh Habitat, Management, Preservation and Restoration Plan (Plan) is an interagency plan prepared by CDFW, U.S. Fish and Wildlife Service (USFWS), Bureau of Reclamation, National Marine Fisheries Service (NMFS), California Department of Water Resources (DWR), Suisun Resources Conservation District and CALFED Bay-Delta Program. It was developed in response to the “various conflicts regarding the use of Marsh resources, with a focus on achieving an acceptable multi-stakeholder approach to the restoration of tidal wetlands and the management of managed wetlands and their functions” (Addendum, Tule Red restoration project). The Plan approaches tidal restoration and managed wetland activities by addressing four major Suisun Marsh resources and functions, (1) habitat and ecological processes; (2) public and private land uses; (3) levee system integrity; and (4) water quality. Implementation of the Plan will take place over a 30-year period and is intended to balance the benefits of tidal wetland restoration and managed wetland enhancements. Its main elements include restoring between 5,000-7,000 acres of tidal marsh, enhancing over 40,000 acres of managed wetlands, maintaining waterfowl hunting, improving water quality for fish and wildlife habitat and providing recreational opportunities targeted by the 2000 CALFED Ecosystem Restoration Program Plan. Tule Red Tidal Restoration Project would be the first tidal marsh restoration to be implemented under the Plan.

**EcoRestore Program.** In 2015, California Natural Resources Agency (Resources Agency), announced The EcoRestore Program to begin restoring the California Delta ecosystem. “California EcoRestore is an initiative to help coordinate and advance at least 30,000 acres of critical habitat restoration in the Sacramento – San Joaquin Delta over the next four years.” According to the Resources Agency, this project targets a broad range of habitat restoration projects, including projects to address aquatic, sub-tidal, tidal, riparian, flood plain, and upland ecosystem needs. The Tule Red Tidal Restoration Project is the first of several projects that would take place in the Suisun Marsh and is identified as a high priority restoration project by the Resources Agency (SFWCA CEQA Summary 2016).

**State Water Project Mitigation.** In 2008, the USFWS issued a biological opinion for Delta Smelt for the incidental take of Delta smelt by the State Water Project and Federal Central Valley Water Project. Similarly in 2009, NMFS issued a biological opinion for the incidental take of green sturgeon and listed salmon for the same project. These two biological opinions required mitigation for the take of listed species in the form of restoration and enhancement 8,000 acres of tidal marsh to improve and enhance fish habitat. This agreement is referred to as the Fish Restoration Program Agreement. The Tule Red Restoration Project would partially fulfill the 8,000-acre tidal restoration mitigation requirements of the Fish Restoration Program Agreement.

## Project Description

### **Project**

**Details:** The applicants, the State and Federal Contractors Water Agency (SFCWA) and Westervelt Ecological Services, LLC, (Westervelt) describe the project as follows:

“The proposed project would restore managed marsh habitat currently used for duck hunting into tidal wetlands. The restoration would include grading and contouring a portion of the site to regain marsh plain elevation; excavating tidal channels, tidal pannes and ponds and construction of a habit berm; permanently breaching the naturally occurring berm to reintroduce tidal cycles to the site; and increasing topographic variability and habitat diversity across the site.” To do so the applicants propose to excavate, fill and balance on-site, approximately 300,000 cubic yards of native soils across 150 acres. The project would begin in late summer or fall 2016 and is expected to take two to three years to complete, with work occurring from June to October of each year. The applicants explain that “[i]mplementation of the project would result in a change in habitat types from managed marsh habitats to self-sustaining tidal marsh habitats,” and that the project is being designed to become a “naturally self regulating system that would not require extensive management or intervention.”

The applicants describe the project objectives as follows:

1. Enhance regional food web productivity and export [nutrients and plankton] to Grizzly Bay in support of delta smelt and longfin smelt recovery.
2. Provide rearing habitats for out-migrating juvenile salmonids.
3. Provide rearing, breeding and refuge habitats for a broad range of other aquatic and wetland dependent species that utilize or depend upon the combination of brackish aquatic-tidal marsh habitat, including Sacramento splittail.
4. Provide ecosystem functions associated with the combination of Delta brackish water aquatic, tidal marsh and upland interfaces that these species require.
5. Provide topographic variability to allow for habitat succession and resilience against future climate change and sea level rise.

The proposed restoration project would be completed in two phases. The first phase is anticipated to start in late summer or fall 2016 and continue through 2017. The soils on the project site would then be allowed to consolidate for one to two years and revegetation would occur. The second phase would commence once consolidation goals were reached and as early as the fall of 2018, with full project completion in 2019.

### **In the Suisun Marsh Primary Management Area:**

#### **Phase 1: Site Preparation**

1. Remove marsh and upland vegetation within the construction footprint;
2. Remove approximately 1,900 cubic yards (cy) of solid fill in the form of existing hunting blinds, foot-bridges, boat docks, and water control structures;

3. Establish a temporary 50-foot by 200-foot construction management center and fuel storage area outside of the habitat construction area; as well as temporary 200-foot by 200-foot equipment staging areas within the habitat berm construction footprint;
4. Construct 44,925 linear feet of tidal channels, ranging in depth from six inches to four feet; and 15 acres of tidal ponds and five acres of pannes through out the project footprint;
5. Construct a 12,000-foot long, 50- to 250-foot wide, undulating transitional habitat berm with a slope ranging from 10:1 to 20:1 along the existing perimeter levee using on site soils;
6. Construct a 1,500-foot long 15-foot wide access maintenance berm with a 10:1 slope across the northern edge of the site using on site soils;
7. Construct a 10-foot wide levee and maintenance road with a 3:1 slope, connecting the two existing levees to create an oxidation pond and water retention area using soil excavated from the project site;
8. Install a 60-foot long by 3-foot wide pipe with a combination tide gate within the new levee in order to discharge water from the oxidation pond into the site when the levels of dissolved oxygen are at ecologically acceptable levels;
9. Retrofit the existing outlet pipe draining adjacent CDFW lands with an aeration nozzle to bring the dissolved oxygen levels in the discharge waters to ecologically acceptable levels. Construction activities associated with pump aeration nozzle consist of installing a metal structure on the end of the existing drain pump outlet. The pump aeration nozzle structure would be suspended from the existing outlet pipe and therefore represents no additional wetland fill; and
10. Replant native plants removed during the construction site preparation and reseed disturbed areas with native seed mix.

**Phase 2:**

1. Remove a clubhouse, associated outbuildings and dual combination tide gates from the project area;
2. Excavate the remainder of the main channel and breach the natural berm at the northern end of the site to restore tidal cycles to the site. The last 400 feet of the main channel would be excavated to a depth of -2 feet NAVD88 with a top width of 50 feet. 50 to 70 feet of natural berm would be removed to accommodate the breach in addition to the excavation of 0.17 acres of shallow water habitat (USFWS BO 2016). The excavation and breach work would be conducted using a long-reach excavator from the adjacent access maintenance berm and the material removed would be side cast along the access berm. The work would be done at low tide to allow suspended sediments loosened in the process to flow into the site with the incoming flood tide rather than out into Grizzly Bay; and

3. Restore the graveled roadways and parking areas designated for access to the construction site with crushed road base, similar to what is currently in place. After completion of the project approximately two inches of crushed road base (approximately 360 cubic yards) will be spread and compacted along these roads. This material is included in the fill calculations.

Public Access: As an alternative to providing on-site public access, the applicants have agreed to provide in-lieu public access through the following activities:

1. Repair and improve two fishing piers - the Island Slough fishing pier, and the westernmost Montezuma Slough fishing pier. The repairs would be completed by 2018 and would include replacing the Island Slough pier superstructure, two pilings and framing in the levee to reconnect the Montezuma Slough pier walkway, and rip rap under the walkway and along the levee. Additional improvements may be necessary to make the piers compliant with the Americans with Disabilities Act (ADA) (Exhibit E and F);
2. Develop and install an interpretive sign at the restored Tule Red marsh site, near existing public access not later than project completion. The sign would be approximately four by six feet in size, and placed in a location that would minimize opportunities vandalism;
3. Develop a comprehensive study to identify future public access opportunities within Suisun Marsh and to provide a suite of options that would improve public access when future restoration and development projects are pursued in the Suisun Marsh. This study would be undertaken beginning in Fall 2016 and would be completed within one year; and
4. At the completion of the project, contribute \$150,000 to the California Coastal Conservancy's Coastal Trust Fund to be held for future Suisun Marsh public access improvements.

**Fill:** The proposed project would result in a net removal of 1,074 cubic yards (cy) of solid fill and removal of an additional 420 square feet (sq ft) of pile supported fill (Table 1).

The transitional habitat berm would be constructed from onsite soils excavated to create tidal ponds and pannes, pilot channels and other onsite excavated soils. The fill calculations include all of the necessary excavations of native soil for creation of channels, pannes and ponds and the use of same on-site soils for construction of new berms, levee and other project features. The applicants propose to remove numerous onsite structures, including 31 duck blinds; seven wooden bridges; a clubhouse pad; and eight water control structures. A new water aeration nozzle and tide gate for dissolved oxygen improvements would be added over the course the project. There would be no import or export of soils to complete the project.

**Table 1**

<b>Tule Red Tidal Restoration Project Fill Totals</b>			
	<b>Removed</b>	<b>New/Placed</b>	<b>Total Net Fill</b>
Solid (cy)	306,334	305,260	-1,074 cy
Pile-Supported (sf)	420	0	-420 sf

**Public**

**Access:** The project will not result in required public access at the site but will provide in lieu public access through the improvement of two off-site public fishing piers within the Suisun Marsh Primary Management Area. In addition, the applicant proposes to develop and place an interpretative sign near the Tule Red site and improve the adjacent parking lot's sign to clarify that it is available for public use. The applicant has also agreed to develop a study to identify future public access opportunities within the Suisun Marsh and provide \$150,000 for implementation of future public access improvements within the Marsh.

**Table 2**

<b>Type of Public Access</b>	<b>Square Feet</b>	<b>Shoreline Length (feet)</b>
<b>In Lieu Public Access</b>		
New (signage)	48	0
Improved (piers, rip rap)	1436	117
<b>Total</b>		
	1484 sq ft	117 feet

**Schedule**

**and Cost:** It is anticipated that Phase 1 of the project construction would commence in Fall 2016 and conclude in 2017. Phase 2, would commence as early as 2018 and conclude in 2019. The estimated project cost is \$5,500,000.

**Staff Analysis**

- A. **Issues Raised.** The staff believes that the application raises four primary issues: (1) whether the project is consistent with the McAteer-Petris Act, San Francisco Bay Plan and Suisun Marsh Protection Plan policies regarding fill in managed wetlands; (2) whether the project would provide maximum feasible public access, consistent with the project; (3) whether the project is consistent with the Suisun Marsh Protection Plan and San Francisco Bay Plan policies on tidal marsh restoration; and (4) whether the project is consistent with the Commission's natural resources policies including Fish, Other Aquatic Organisms and Wildlife; Water Quality.

1. **Fill.** The Commission may allow fill only when it meets the requirements identified in Section 66605 of the McAteer-Petris Act, which states, in part, that: fill should be “the minimum amount necessary to achieve the purpose of the fill”; that “the nature, location, and extent of any fill should be such that it will minimize harmful effects to the Bay area, such as, the reduction or impairment of the volume, surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources, or other conditions impacting the environment...”; and that “fill should be authorized when the applicant has such valid title to the properties in question that he or she may fill them in the manner and for the uses to be approved.”

Bay Plan and SMPP policies regarding managed wetlands state that the design and evaluation of “[a]ny project for the restoration, enhancement or conversion of the managed wetlands to subtidal or wetland habitat ... should include an analysis of: ...potential fill activities, including the use of fill material such as sediments dredged from the Bay and rock to assist restoration objectives.”

The project applicants propose placement of native, on-site fill material to accomplish tidal wetland restoration. The work includes the excavation and placement of fill associated with the creation of a tidal breach, a network of tidal channels and marsh ponds and pannes, and the filling and raising of low-lying ponded areas to marsh plain elevation to improve drainage. The work also involves the placement of excavated native fill to construct a transitional habitat berm.”

The project does not include importation of off site soils. All cut and fill proposed for the project features (approximately 300,000 cubic yards) would occur in the managed wetlands and upland areas of the 150-acre project footprint. The on-site soils would be excavated during the creation of the tidal channels, pannes and ponds within the project area, and used predominately for the construction of the transitional habitat berm. This berm would be constructed along the Bay side of the existing levees to form sloped transitional habitat. Its long shallow slope is designed to be resilient to sea level rise and provide high-water refuge for salt marsh harvest mouse and Ridgway’s rail. The transitional habitat berm is a component required for tidal restoration projects under USFWS 2013 Biological Opinion for the Plan.

Two additional features would be built on site. A maintenance access berm (below mean higher high water) along the northern edge of the Tule Red property, perpendicular to the main transitional habitat berm to provide access to the breach area. Also a levee connecting the two existing levees in the Westervelt-owned portion of the site would form a containment pond for CDFW site drainage water and create a permanent point of access to the site.

The project would remove existing solid and pile-supported fill from the project footprint in preparation for the excavation of the channels and construction of the transitional habitat berm and levees. All built structures will be removed from the site, with the exception of a single boat dock that will remain on the existing tidal slough and

will be used for access for future monitoring activities. In total, demolition of existing structures would result in the removal of approximately 1.2 acres (approximately 1,900 cubic yards) of fill from wetlands. This structural fill has been included in project calculations of net fill.

As described earlier in this summary, a new tide gate would be installed in the new berm connecting the two existing levees and creating the oxidation pond. A high-density polyethylene pipe measuring 50 feet long by 3 feet wide would be installed with combination tide gate and result in 450 square feet of fill. This new fill is included in the total net fill calculations seen in Table 1. Construction activities associated with pump aeration nozzle consist of installing a metal structure on the end of the existing drain pump outlet. The pump aeration nozzle structure would be suspended from the existing outlet pipe and therefore represents no additional wetland fill.

Upon completion of the project's construction activities, the graveled roadways and parking areas designated for access to the construction site would be restored with crushed road base, similar to what is currently in place. Approximately two inches of crushed road base (approximately 360 cubic yards) would be spread and compacted along these roads. This material is included in the fill calculations.

The public access features proposed for the project include the installation of an informative sign and the repair and improvement of two off-site fishing piers, the Island Slough fishing pier and the westernmost Montezuma Slough fishing pier. The new sign would be placed near the restored Tule Red site and would amount to 48 square feet of fill. The proposed repairs to the Island Slough fishing pier include replacing the superstructure and potential improvements to render the pier compliant with ADA standards. The Montezuma Slough fishing pier repairs include raising the pier's subsided walkway, replacing the two pilings in the existing levee and suspending a cross-beam from them to support the pier walkway. Previously eroded rip-rap would be replaced underneath the walkway for approximately 80 feet to prevent additional bank erosion. The fill associated with the improvements of the two piers is 1,436 square feet and impacts 117 feet of shoreline.

As shown in Table 1, the project has balanced the amount of fill removed and re-used by the project. By applying all of the on-site soils to project elements and removing the numerous man-placed fill items, the project fill calculations result in a negative net fill.

- a. **Minimum Amount Necessary.** In addition to considering a "no project" alternative during the planning and design phase of the restoration project, six alternative versions of the tidal channels and transitional habitat berm combinations were proposed, analyzed and reviewed by resources agencies for adherence to the Plan and their policies and regulations. The least environmentally damaging practicable alternative was chosen for its minimization of net fill and its provision of adequate transitional and refuge habitat for protect upland species. The amount of fill required for the berm was determined by its moderate slope of 10:1 to 20:1 with a maximum elevation of 11 feet NAVD88. In addition to providing habitat, the berm would also bolster the existing levee and protect the neighboring properties from flooding as well as from wind and wave action (NHC, 2015).

Although the majority of the proposed construction involves the excavation and placement of fill and the removal of structures, the proposed project also includes placement of new fill. The following activities have fill associated with them and have been included in the total net fill calculations:

- (1) The placement of the new tide gate during Phase 1 would result in 450 square feet of appropriately sized fill.
- (2) The creation of equipment staging areas within the project footprint would be accessed using the existing roads within the project site. Upon project completion these gravel roads would be restored with approximately 360 cubic yards of road base to return them to pre-project condition and the levee tops would receive a final dressing of fill using excavated on-site soil to bring their elevations back to pre-project levels and to compensate for any compaction during the construction phase.
- (3) Although located off-site the fill associated with the public access improvement is also included in the fill calculations. The two piers identified as needing repairs, including the placement of rip raps will result in 1,436 square feet of fill along the Island and Montezuma sloughs.

Because the project includes using on-site soils for the majority of the constructed features, the quantity of the fill brought onto the site is minimal, and results in a net reduction of fill in the managed wetland as it is converted to tidal marsh, thereby minimizing fill.

- b. **Effects on Bay Resources.** As previously stated, the primary purpose of the restoration project would be to increase the habitat functions of the project area. In converting the managed wetland to tidal marsh, there is some loss of habitat and resources, particular to waterfowl that use the site to over-winter. In addition, the site includes some seasonal wetlands in the form of water distribution ditches, but these are assessed as having limited habitat value and would be detrimental to water circulation on the site if they persisted. The applicant notes that once completed, the project would, “benefit water volume, circulation, fish and wildlife resources and marsh fertility at the site.” The construction of the tidal channels, ponds and pannes and the breach of the natural berm would introduce tidal prism to the site and the additional water circulation and retention of waters in the ponds and pannes would increase the foodweb productivity of the site. It is likely that for a period of time, while marsh vegetation is establishing, waterfowl and shorebirds will use the ponds and pannes and the site will also likely provide rearing habitat for out-migrating juvenile salmonids. The newly constructed transitional habitat berm would also have positive impacts on the species dependent on the tidal marsh and upland transitional ecosystems in addition to being resilient to future sea level rise.
- c. **Valid Title.** Westervelt holds title to the 2,000-acre Tule Red property. This restoration site constitutes 354 acres of the overall property owned by Westervelt. Westervelt and SFCWA have a Grant of Easement Agreement allowing SFCWA the right to take any action to restore, create, and/or preserve tidal marsh on the property party. Approximately sixty-six acres of the project site is owned by CDFW.

SFCWA and Westervelt have a Site Access Agreement with CDFW granting SFCWA authority over the 66-acre CDFW-owned portion of the Tule Red project site, allowing them to construct the project on CDFW property as well as Westervelt's property as one complete restoration unit.

- d. **Safety of Fills / Sea Level Rise.** To remain consistent with the Plan requirements, levees located on restoration sites must continue to protect adjacent private properties. In response to this requirement and the Commission's policies, the restoration project would place the newly excavated soil against the existing levee slope in the form of a transitional habitat berm to buttress the existing levee and maintain the current level of flood protection for adjacent properties.

To ensure adequate transitional habitat berm structural soundness, technical studies were conducted during the planning and design phase of the project. A geotechnical investigation for levee rehabilitation and grading was performed for the proposed project. The evaluation of the levee's safety and reliability included consideration of over-toppings due to floods, seepage below and through the levee, the stability of the levee slopes, levee settlement and creep, wind waves, erosion and seismic resistance (Hultgren-Tillis Engineers, 2015). Although a detailed analysis of seismic risk for the levees was not done, the preliminary review suggested that most of the levee consists of material that is not expected to liquefy. However, the marsh soils directly beneath the levee may liquefy due to earthquake shaking (Hultgren-Tillis Engineers, 2015). This would be true of the entire marsh, however, and this project is not expected to increase the risk, nor put people in harms way. The study states that the existing levee was not built to a specific design standard and concludes that some rehabilitation of the levee is needed to maintain the existing integrity and reliability of the levee. The project proposes to make those improvements to ensure levee stability when constructing the transitional habitat berm.

The Commission should determine whether the proposed project is consistent with the McAteer Petris sections and relevant San Francisco Bay Plan and Suisun Marsh Protection Plan policies regarding fill in managed wetlands.

## 2. **Public Access**

- a. **Maximum Feasible Public Access.** Section 66602 of the McAteer-Petris Act states, in part, that "...existing public access to the shoreline and waters of the...[Bay] is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided." In addition, the Bay Plan policies on public access state, in part, that "a proposed fill project should increase public access to the Bay to the maximum extent feasible..." and that "access to and along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available." The SMPP Recreation and Access policies recognize the high demand for recreational uses of the Suisun Marsh. Policy 3 states that "[p]ublic agencies acquiring land in the Marsh for public access and recreational use should provide a balance of recreational needs by expanding and diversifying opportunities for activities such as bird watching, picnicking, hiking and nature study." Policy 4 addresses the

care of public access areas by stating “[a]gencies administering land acquired for public access and recreational use should be responsible for maintaining the areas and controlling their use. Signing on roads leading into the Marsh and maintaining litter receptacles at major public use areas should be provided by the appropriate local or State agency to prevent littering and vandalism to public and private property.”

Bay Plan Public Access policies also include exceptions to on-site public access under certain circumstances. The policies state that, “in cases where public access would be clearly inconsistent with the project because of public safety considerations... in lieu access at another location preferably near the project should be provided.”

Currently, limited public access near the Tule Red site consists Grizzly Island Road, a county road crossing the Grizzly Island Wildlife Refuge, and a poorly noticed public parking lot known as Lot 1. The adjacent CDFW lands include walking trails for wildlife viewing. Between August and February of each year, the Wildlife Area is closed to the general public, but open to licensed hunters who have drawn tags or entry permits through a public process. Providing public access within the site and adjacent to neighboring properties where hunting is occurring puts public safety in jeopardy, therefore no on-site trails or access are proposed.

The applicants propose to provide the following public access improvements as part of the restoration project:

- (1) Repair and improvement of two off-site fishing piers on Island Slough and Montezuma Slough. These piers are used year-round and have approximately 10,000 use-days per year. They have fallen into disrepair and need new decking, superstructure improvements and potential retrofitting to render them ADA-compliant. The pier at Montezuma Slough has significant levee slumping issues and requires levee repair to make the pier accessible to users. The piers are owned by CDFW, and the SFWCA would provide the funding to perform the repairs. The repair work would begin in 2017 and be completed by 2018 (Exhibit E);
- (2) The creation and installation of an interpretive sign at the restored Tule Red marsh site, near existing public access. The interpretive sign would have project features and habitat values of the marsh. The sign would be approximately four feet by six feet in size, be weather resistant and placed in a location that would minimize opportunities for vandalism. The sign would be in place no later than project completion in 2018;
- (3) Improvement of Lot 1 signage, making it legible to Marsh visitors and indicating available parking. The sign would be improved no later than project completion in 2018;
- (4) The development and implementation of a comprehensive Suisun Marsh public access opportunity study. The study would include stakeholder meetings to identify potential public access improvements throughout the

Suisun Marsh in preparation of future restoration projects in the area. The SFWCA would initiate the study activities in Fall 2016 and complete the study by the end of 2017. The study would be funded by the Department of Water Resources, which has committed \$150,000 for the study; and

- (5) Once the restoration project and the study is complete, the applicants will contribute \$150,000 to the California Coastal Conservancy's Coastal Trust Fund to be used for future public access improvements within Suisun Marsh.

The applicants are not proposing on-site public access due to concerns about the site's proximity to private duck hunting clubs, the sensitive aquatic and terrestrial species found on the site and limited public roads and trails leading to the site, and seasonal closure to public use (6 months per year). They believe the in-lieu package adequately represents the maximum feasible public access consistent with the project. Commission staff visited the site and spoke with the applicants on several occasions regarding the proposed public access. Staff felt that public access could be provided along a portion of the levee tops to allow views of the Tule Red site, understanding that the access would be closed to the public during hunting season. Such access would allow closer views of the restoration area, the Bay and of wildlife on or near the site. The entrance to the levee path would be near the Lot 1 parking area and interpretive signage could inform visitors about the site and its restoration. The applicants explained that the levee path was adjacent a privately owned duck club and expressed concerns about members of the public being on/near private lands reserved as a managed marsh. The applicants added that by repairing the two fishing piers they would be improving high use public access that would be put into use right away and that their financial contributions would also directly impact future public access in the Marsh.

Staff acknowledges that the above-mentioned in-lieu public access is an alternative means of encouraging public use of Suisun Marsh. Island Slough fishing pier is well used and the repairs would be appreciated and the new signage informative to visitors. Additionally, the comprehensive public access study would allow future projects to be consistent with Public Access Policy 13 that states that "[p]ublic access should be integrated early in the planning and design of Bay habitat restoration projects to maximize public access opportunities and avoid significant adverse effects on wildlife."

- b. **Barrier Free Access.** Public Access Policy 7 states in part that public access improvements "should be designed and built to encourage diverse Bay-related activities and movement to and along the shoreline, should permit barrier free access for persons with disabilities to the maximum feasible extent, should include an ongoing maintenance program and should be identified with appropriate signs." The applicants reviewed the 2016 California Access Compliance Advisory Reference Manual and the Access Board's "accessible fishing piers & platforms" guides for ADA specifications applicable to the two piers. The following ADA considerations could be applied to the improvements of

the fishing piers: pier surface and dimensions, roadway and parking lot conditions, and the slope of parking lots, paths and ramps. Both piers would be evaluated per the ADA standards to identify the appropriate improvements necessary to bring the piers into compliance.

- c. **Recreational Opportunities.** Bay Plan Recreation policies state in part that “[d]iverse and accessible water-oriented recreational facilities...and fishing piers, should be provided to meet the needs of a growing and diversifying population, and should be ...improved to accommodate a broad range of water oriented recreational activities for people of all races, cultures, ages, and income levels.” The in-lieu public access proposed by the applicants encourages the use of the Suisun Marsh for outdoor recreation, specifically fishing and wildlife viewing from the piers. Repairing the fishing piers ensures their continued existence and use by a variety of visitors. The inclusion of interpretive signage at the restoration site would inform visitors of restoration activities and habitat values of the Marsh. The public access opportunity study and funds would identify and support future public access developments in the Marsh. Lastly, the funds set aside for future public access improvements would provide a modest funding source for future improvements on site, or at other appropriate sites in the Marsh.
- d. **Appearance, Design, and Scenic Views.** Implementation of the project would not adversely impact present or future public access and views to the Bay, as Grizzly Island Wildlife Refuge is open to the public. The restoration work would remove man made structures from the Tule Red site, open it to tidal flows and encourage the development of new habitat. The change of use and visual characteristics would potentially allow research and other educational programs access to the site in the future to expand awareness of restoration, ecological values and wildlife habitats.

The Commission should determine whether the proposed project is consistent with the Bay Plan and the Suisun March Protection Plan policies regarding maximum feasible public access consistent with the project, recreational opportunities, and appearance, design and scenic views.

### 3. Natural Resources Policies

- a. **Managed Wetlands Policies.** The SMPP Environment Policy 1 states, “[t]he diversity of habitats in the Suisun Marsh and surrounding upland areas should be preserved and enhanced whenever possible to maintain the unique wildlife resource.” The Bay Plan Managed Wetlands Policy 2 states in part that, “[i]f the owner of any managed wetland withdraws any of the wetlands from their present use, the public should make every effort to buy these lands and restore them to tidal or subtidal habitat, or retain, enhance and manage these areas as diked wetland habitat for the benefit of multiple species.”

Westervelt purchased the Tule Red property, a privately owned duck club, on behalf of SFCWA (SFCWA owns the Habitat Development Rights) for the sole purpose of restoring it from managed wetlands to tidal marsh and transitional upland habitat for the benefit of protected fish and wildlife species. The applicants would complete the restoration project; conduct the multi-year monitoring; and once the project has met the success criteria, propose to transfer the property holdings to a public entity for future management. The applicant has tentatively identified the CDFW to add it to their wildlife refuge holdings. CDFW has not yet agreed to a potential transfer of the property, but discussions are ongoing.

Bay Plan Managed Wetland Policy 3, as well as SMPP Land Use and Marsh Management Policy 14, states that “any project for the restoration, enhancement or conversion of managed wetlands to subtidal or wetland habitat should include clear and specific long-term and short-term biological and physical goals, success criteria, a monitoring program, and provisions for long-term maintenance and management needs.” Both policies also specify key elements and issues to be analyzed over the course of project design.

As described above, Bay Plan and SMP policies require site goal and analysis of potential issues. The following information was provided by the applicants:

- (1) **Anticipated Habitat.** Applicants stated that the implementation of the project would result in a change in habitat types from managed marsh (duck club) habitat to self-sustaining tidal marsh habitat. The current elements of the duck club, such as the non-tidal marsh, ponds, and internal delivery channels would be replaced with tidal wetlands, channels, ponds and pannes. The existing transitional habitat would be improved and increased creating more diverse habitat for terrestrial species.
- (2) **Potential Fill Activities.** The project includes excavation of native soil to create a tidal breach, a network of tidal channels, and tidal ponds/pannes, and the placement of excavated native soil materials through out the project site to raise areas to marsh plain elevations and along the eastern border of the site to create the transitional habitat berm. No rock is proposed to be used to assist restoration objectives.
- (3) **Food Management Measures.** The project design protects adjacent properties from flooding as required by the Plan. The Plan requires restoration projects to maintain and improve the Suisun Marsh levee system integrity to protect property, infrastructure and wildlife habitats from catastrophic flooding. The project includes a habitat berm designed to protect adjacent managed marsh properties from increased risk of flooding by providing wind and wave-action protection.
- (4) **Mosquito Abatement Measures.** The project proposes a large network of tidal channels and several tidal ponds designed to increase onsite production of zooplankton and thereby increase foodweb production onsite and within Grizzly Bay. It is possible that these features may host salt marsh mosquito

larvae during the warm months of the year. Because they do not dry up during tidal cycles the tidal ponds typically host a variety of insectivorous fish that prey on mosquito larvae. When the tidal ponds are over topped on the spring tides each month, these fish would be distributed throughout the tidal marsh channel complex. The larval stage usually matures during winter and the adult emerge mid-February – May. The project site lies within Solano County Mosquito Abatement District, which provides regular monitoring of wetlands and control of nuisance adult mosquitoes throughout the Marsh.

- (5) **Non-Native Species Control Measures.** After the interior construction of the site is complete, the site would be managed to establish tidal marsh habitat and control invasive vegetation prior to breaching the site. Once the site had been breached a monitoring program of physical processes, vegetation establishment and invasive vegetation on the site will be conducted to determine if restoration objectives are being met. If they are not being met, SFCWA, along with the resources agencies, will analyze ecological and physical processes at work and propose remedial action. The project's Adaptive Management and Monitoring Plan (AMMP) also describes surveys to document location and spread of non-native species and provides measure for control and adaptive management.
  - (6) **Opportunities for Public Access and Recreational Activities.** The applicants explained that due to incompatible adjacent land uses (hunting) land access of the shoreline and marsh is not feasible at this time. The applicants have proposed several in-lieu public access solutions as an alternative to on-site public access. Once completed, the project could also potentially provide public access to the site via canoes and kayaks as it will be open to Grizzly Bay.
  - (7) **Water Quality Protection Measures.** According to the applicant an AMMP has been prepared that includes the timing, methods and criteria for monitoring for constituents of concern, such as methylmercury.
- b. **Restoration of Tidal Marshes.** SMPP Environment Policy 2 states, "[t]he Marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and low-land grasslands are critical habitats for marsh-related wildlife and are essential to the integrity of the Suisun Marsh. Therefore, these habitats deserve special protection."

The Bay Plan Tidal Marsh and Tidal Flat Policy 4 states that, "[w]here feasible, former tidal marshes and tidal flats that have been diked from the Bay should be restored to tidal action in order to replace lost historic wetlands or should be managed to provide important Bay habitat functions, such as resting, foraging and breeding habitat for fish, other aquatic organisms and wildlife."

The Bay Plan's Fish, Other Aquatic Organisms and Wildlife Policy 1 states that "[t]o assure benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay's tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased. Policy 2 states

“[s]pecific habitat that are needed to conserve, increase or prevent the extinction of any native species, species threatened or endangered, ...should be protected.

Tidal Marsh and Tidal Flats Policy 6 indicates that “[a]ny ecosystem project should include clear and specific long-term and short-term biological and physical goals, and success criteria, and a monitoring program to assess the sustainability of the project. Design and evaluation of the project should include and analysis of: how the system’s capacity can be enhanced so that it is resilient to sea level rise and climate change; localized sediment erosion and accretion; the role of tidal flows; rates of colonization by vegetation; the expected use of the site by fish, other aquatic organisms and wildlife; and site characterization. It further states, if success criteria are not met during the life of the project, appropriate adaptive measures should be taken.

Prior to European settlement of the Delta, Suisun Marsh was a vast, brackish water marsh, providing nationally significant wildlife habitat. Over time, duck hunting clubs were established in the Marsh, diking off the large areas of marsh from tidal action, and creating a tangled network of water control structures that allowed owners to cultivate vegetation specifically to attract waterfowl for hunting purposes. As described above, the project’s goal is to reestablish tidal marsh on 420 acres of the site; increase marsh vegetation; tidal pannes and ponds; channels and transitional habitat that will support the production of nutrients and plankton for export to Grizzly Bay, provide habitat for native and listed species, and be resilient to sea level rise.

Because Suisun Marsh is a brackish marsh, rather than the Bay-dominated salt marsh habitat, it has the potential to support native and listed species of plants and animals that have limited habitat in other areas of the Bay and Delta. Restoring Tule Red increases brackish marsh habitat in the region and thereby enhances, restores and protects this limited habitat and the species that inhabit it. The constructed site features include a mosaic of microhabitats and transitional features that may adapt to new habitat types as sea level rises. In addition, the transitional habitat berm would provide high tide refugia now.

Per Tidal Marsh Policy 6, the project proponents conducted a number of studies to inform the site design and habitat evolution on the site. With resilience in mind, the geotechnical study characterized the site’s soils in order to properly engineer the transitional habitat berm and bolster the existing levee on which it will be placed. The study determined the appropriate compaction level, appropriate berm slopes, and the methods and timing of soil placement along the levee.

The *Hydraulic and Geomorphic Basis of Design Report* (NHC 2015) discusses the analysis of the tidal inundation periods and specified the optimum size and depth necessary for the channels, ponds and pannes to retain water as habitat for zooplankton before being cycled out on higher tides. The tidal channel network would allow flooding and draining with each tide cycle, adding tidal prism volume and tidal flux to provide full tidal exchange across the project site.

Similarly, the proposed tidal ponds and pannes were designed to retain tidal waters to allow adequate growth time for zooplankton to reach an optimal size for foodweb production; which according to the work of Dr. Peter Moyle (2015) is about 14 days. Without the onsite ponds, the majority of the site would flood and drain diurnally and limit the mean residence time to about 3-9 hours (NHC, 2015). The tidal pannes would flood only on spring tides and would have a mean residence time of about a month. Their longer duration of inundation, variability in topography, and increased salinity levels, are intended to provide physical habitat and vegetation diversity within the marsh plain (NHC, 2015).

The *Basis of Design Report* (NHC, 2015) also referred to the National Resource Council (NRC, 2012) updated sea level rise estimates for the San Francisco Bay, and concluded that the sediment accretion rate within the marsh and along the sloped berm would be able to keep pace with sea level rise rates in the region through at least 2065 due to the accretive nature of this embayment. It also stated that bioaccretion of decaying marsh vegetation could greatly supplement the sediment accretion rate.

The Tule Red AMMP details the short and long-term physical and biological goals of the project and includes a monitoring program, adaptive management measures and provisions for longer-term maintenance and management needs such as water quality and non-native species control. The monitoring program includes the methods, metrics and frequency of monitoring the physical processes, hydrology, water quality, food web, fish, wetland and vegetation of the site. The results of such surveys would be used to manage, maintain and protect the restored habitat and the species on site. Initially developed to be implemented during project construction and continuing annually for five years once the site is breached and every five years thereafter, the AMMP is a “living” document that will be revised as the restoration project warrants.

- c. **Fish, Other Aquatic Organisms and Wildlife.** Bay Plan Policy 2 regarding Fish, Other Aquatic Organisms and Wildlife, discussed above, also state that listed or candidate species ... under the California Endangered Species Act, or any species that provides substantial public benefits, should be protected, whether in the Bay or behind dikes. Further, Policy 4 (a) in summary directs the Commission to consult with the resource agencies whenever a proposed project may adversely affect an endangered or threatened plant or wildlife species. Policy 4 (b) also states that the Commission should not authorize projects that would result in the "taking" of any listed species unless the project applicant has obtained the appropriate "take" authorization. Finally, Policy 4 (c) directs the Commission to give appropriate consideration to the recommendations of the resources agencies to avoid possible adverse effects of a proposed project wildlife and its habitat.

Suisun Marsh is home to a number of listed species, and activities within the Marsh, whether restoration, levee maintenance or dredging have the potential to impact these species. Due to concern for the Marsh and the habitat provided for special status species, the regulatory and resource agencies worked together

over the past several years to establish avoidance, minimization and mitigation measures for activities that regularly occur there. As a result the agencies developed the Plan, which describes permissible activities and corresponding minimization and mitigation measures. Responding to this plan, in 2013 NMFS and USFWS issued programmatic biological opinions for the Plan. These biological opinions provide incidental take authorization and terms and conditions for activities listed in the Plan. Restoration of tidal marsh is programmatically covered in the biological opinions, however, it requires a project level evaluation. In addition, the project proponents are seeking to fulfill mitigation requirements for the State and Federal Water Project's biological opinion with this project.

In an effort to comply with the requirements of the programmatic biological opinions, the applicants selected the Tule Red Duck Club property as the first 420 acres of the required 8,000 acres of restoration. The applicants have designed this project to be consistent with the criteria described in the Plan for tidal wetland restoration projects and to reduce impact to listed species through project design and implementation of avoidance and minimization measures. NMFS determined that the incidental take of salmonids and sturgeon associated with implementation of the project would already be covered in their 2013 Programmatic Biological Opinion for the Plan and concurred that the project would not need further consultation.

At the request of USACE, a new effects analysis was prepared in 2016 because: (1) the restoration project's protective measures for the salt marsh harvest mouse differed from those in the USFWS programmatic biological opinion; and (2) the proposed project requires USFWS authorization for incidental take of listed salt marsh harvest mouse for impacts due to construction and breaching activities; and monitoring of listed fish species and adaptive management activities.

On August 1, 2016, USFWS provided the appended project level biological opinion, adding details on notifying the USFWS should any California Ridgeway's rail (formerly clapper rail), salt marsh harvest mouse, California least tern and Delta smelt be entrapped, injured or killed; education of project personnel on the conservation measures and terms and conditions; and the reporting requirements of the biological opinion, to the terms and conditions included in the programmatic review. In this review the USFWS determined that the project as proposed was not likely to jeopardize the existence of Ridgeway's rail, salt marsh harvest mouse, California least tern and Delta smelt, and authorized incidental take for the above species.

The overall project design is consistent with the Plan, the various biological opinions' terms and conditions. The proposed project objectives are species focused and include in part, "[e]nhancing regional food web productivity in support of Delta smelt and longfin smelt recovery; providing rearing, breeding and refuge habitats for aquatic and wetland dependent species that utilize brackish aquatic-tidal marsh habitat; and providing topographic variability for

habitat succession and resilience against future climate change and sea level rise.” While the project will have temporal impacts to the site, its overall design and habitat features would likely provide improved habitat for listed and native species as the site develops and matures.

- d. **Water Surface Area and Volume and Water Quality Policies.** The Bay Plan Surface Area and Volume Policy 1 states “the surface area of the Bay and the total volume of water should be kept as large as possible in order to maximize active oxygen interchange, vigorous circulation, and effective tidal action...”

The Bay Plan Water Quality Policy 1 states, in part that “Bay water pollution should be prevented to the greatest extent feasible. The Bay’s tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality.”

Policy 2 states that “[w]ater quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board’s (RWQCB) Basin Plan and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice, and authority of the State Water Resources Control Board and the Regional Board should be the basis for carrying out the Commission’s water quality responsibilities.”

The restoration site is currently disconnected from daily tidal influence, and reconnecting it to the Bay would increase the Bay’s surface area by 420 acres, and increase tidal exchange of waters, oxygen and nutrients. As a managed wetland, the water levels on site have been managed on a seasonal basis for production of vegetation to attract waterfowl. A water supply and drainage channel runs along the edge of the levee on the eastern edge of the site. This channel has dual combination flap gates on both the northern and southern ends of the site, which connect to the Bay. As a duck club, the site is kept flooded from October to February, drained and reflooded in the spring to leach salts from the soil and drained completely summer through early fall for discing and mowing and maintenance. Restoring tidal action to the site would dilute the leached salts and buffer water quality with the return of brackish water to the site.

Further, the installation of the new tide gates, diffuser nozzle, and oxidation pond would address the low dissolved oxygen levels in water draining onto the site via CDFW’s discharge pump and outfall drain from adjacent property at the southern end of the site. At times this drain water has had low dissolved oxygen, and when concentrated in the channels has negatively impacted aquatic life. The proposed tide gates and oxidation ponds avoid the generation and discharge of low dissolved oxygen waters from adjacent properties. An increase in tidal prism throughout the site would increase the tidal mixing process. To ensure that dissolved oxygen in the water is properly managed, the proposed AMMP includes monitoring and management measures.

Historically, sediments from the Gold Rush were transported through the Delta into the Bay, leaving a legacy of mercury-laden sediments. Mercury contamination continues today through atmospheric deposition across the Bay Area. Restoring sites to tidal marsh may increase the potential for mercury to methylate, making it bio-available to animals living in that marsh. To address this potential issue, the project proponents have included seasonal monitoring of aqueous methyl mercury in the Adaptive Management and Monitoring Program. Recognizing the importance of SFEI's Regional Monitoring Program for SF Bay and proposed Delta RMP the applicant would seek opportunities to collaborate on methyl mercury studies.

Applicants state that temporarily increased levels of suspended sediment and turbidity could occur as result from the construction of the channels, ponds and site grading. In order to prevent or minimize the release of sediment, after completion of Phase 1 all disturbed areas would be revegetated and managed to stabilize the soils before implementing Phase 2. This second phase involves the breach of the natural berm connecting the site to Grizzly Bay. The breach would be conducted during a low tide to prevent excavated soils from entering Grizzly Bay and to allow any loose sediment to be pushed into site on following incoming high tide.

To address construction impacts from the project footprint and grading a Stormwater Pollution and Prevention Plan would be prepared for the project and would include Best Management Practices ensuring no sediments or pollution would be released in to Grizzly Bay. Further, the construction drawings and plans submitted to the Commission would include an erosion and sediment control plan.

To further reduce the potential for discharges of pollutants, the project would also comply with minimization/mitigation measures outlined in the Plan's EIS/EIR. These measures include daily inspections of all equipment for oil and fuel leaks; trash and construction debris removal; maintenance of waste facilities; preparation and implementation of erosion and sediment control plan; and developing a hazardous material plan.

The Commission should determine whether the project is consistent with its laws and policies regarding natural resources and water quality.

4. **Mitigation.** The Bay Plan Mitigation Policy 1 states that "projects should be designed to avoid adverse environmental impacts to Bay natural resources...Whenever adverse impacts cannot be avoided, they should be minimized to the greatest extent practicable...measures to compensate for unavoidable adverse... Bay should be required".

The restoration project proposes to convert a current managed marsh into tidal marsh. Currently the site includes approximately 320 acres of managed wetlands in the form of a duck club; 54 acres of tidal wetlands; and 46 acres of upland. As a duck club, the site has limited habitat but seasonally supports overwintering waterfowl. The construction of this project and the introduction of tidal cycles to the site would

impact the existing habitat. The restored site would likely provide habitat for foraging waterfowl and shorebirds, but over time would transition into a vegetated site that will support different species of birds and mammals, potential listed species.

The onsite construction will impact existing habitat and would take between two and three years to complete. In recognition of these construction impacts, the applicants have proposed a number of best management practices and minimization measures for the proposed work, including methods and timing of vegetation removal; and the timing of dredging the pilot channel into Grizzly Bay. By adhering to the conservation measures outlined in the USFWS 2016 Biological Opinion for the project and the NMFS 2013 Biological Opinion for Plan the applicants will further minimize or prevent directly impacting protected species.

The project would result in the creation of 420 acres of new tidal and transitional habitat and water quality improvements. The project would introduce tidal prism to the site and increase its foodweb productivity; the newly constructed transitional habitat berm would also have positive impacts on the species dependent on the tidal marsh and upland transitional ecosystems in addition to being resilient to future sea level rise. The beneficial outcomes of the restoration of 420 acres of tidal marsh, which is limited in this area, outweighs the temporal loss of approximately 54 acres of tidal emergent vegetation on this site. By implementing best management practices, minimization and conservation measures during development; and adhering to its monitoring and management plans, the project reduces and compensates for any adverse impacts and as such is self-mitigating.

The Commission should determine whether the proposed project is consistent with the McAteer Petris sections and relevant San Francisco Bay Plan policies regarding mitigation.

5. **Climate Change.** The Commission's Climate Change policies include discussions of habitat restoration projects. Bay Plan Climate Change Policy 7 states that " Until a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts. The following specific types of projects have regional benefits, advance regional goals, and should be encouraged, if their regional benefits and their advancement of regional goals outweigh the risk from flooding:...d. a natural resource restoration or environmental enhancement project".

As detailed through this summary the Tule Red restoration project has been designed to provide public benefits by increasing Bay surface area and improving water quality in the Suisun Marsh as well as creating tidal habitat conducive to foodweb productivity for protected species. The upland element of the project, the transitional habitat berm was designed to provide terrestrial habitat and to bolster the existing levee and maintain its flood protection capacity. Hydrology and geology

studies conducted during the project planning concluded that the accretive nature of the site in combination with the berm's slope would render the site resilient to sea level rise. Tule Red is the first restoration project to be implemented under the regional Plan. The Plan describes the region's restoration and managed wetland goals and the actions to be taken in the Marsh in response to the ecological and land use needs over the next 30 years.

The Commission should determine whether the proposed project is consistent with the McAteer Petris sections and relevant San Francisco Bay Plan policies regarding climate change.

- B. **Review Boards.** The project was not reviewed by the Engineering Criteria Review Board and the design Review Board. The public access proposals resulting from the marsh-wide public access study may be reviewed by the Design Review Board.
- C. **Environmental Review.** The Suisun Marsh Habitat, Management, Preservation and Restoration Plan EIR was certified by CDFW in December 2011. The Suisun Marsh Habitat, Management, Preservation and Restoration Plan EIS Record of Decision was signed by the Bureau of Reclamation and the United States Fish and Wildlife Service in April 2014. The Tule Red project is part of the programmatic analysis of the overall Plan, but was not evaluated at the project level. An addendum to the Suisun Marsh Habitat, Management, Preservation and Restoration Plan EIS/EIR was prepared in February 2016 by SFCWA to analyze the implement the proposed Tule Red Tidal Restoration Project under the California Environmental Quality Act.
- D. **Relevant Portions of the McAteer-Petris Act**
  - 1. Section 66602
  - 2. Section 66605
  - 3. Section 66632
- E. **Relevant Portions of the San Francisco Bay Plan**
  - 1. *San Francisco Bay Plan* Policies on Fills in accord with Managed Wetlands
  - 2. *San Francisco Bay Plan* Policies on Safety of Fill
  - 3. *San Francisco Bay Plan* Policies on Public Access
  - 4. *San Francisco Bay Plan* Policies on Managed Wetlands
  - 5. *San Francisco Bay Plan* Policies on Tidal Marsh and Tidal Flats
  - 6. *San Francisco Bay Plan* Policies on Fish, Other Aquatic Organisms, and Wildlife
  - 7. *San Francisco Bay Plan* Policies on Water Quality
  - 8. *San Francisco Bay Plan* Policies on Water Surface Area and Volume
  - 9. *San Francisco Bay Plan* Policies on Mitigation
  - 10. *San Francisco Bay Plan* Policies on Climate Change Mitigation

**F. Relevant Portions of the Suisun Marsh Preservation Act**

1. Section 29009
2. Section 29011

**G. Relevant Portions of the Suisun Marsh Protection Plan**

1. Suisun Marsh Protection Plan Policies on the Environment
2. Suisun Marsh Protection Plan Policies on Land Use and Marsh Management

**H. Relevant Portions of the Solano County Policies and Regulations Governing the Suisun Marsh**

1. Section II Suisun Marsh Policies Contained in the Solano County General Plan –Resource Conservation and Open Space Elements

**Exhibits**

- A. Regional Map**
- B. Project Vicinity Map**
- C. Proposed Site Plan**
- D. Habitat Berm Cross-Section**
- E. Public Access Map**
- F. Existing Site Conditions and Photos**
- G. CEQA Summary**